

Amendments to the Claims

Please cancel Claims 26-30. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Original) A klystron amplifier comprising means defining a plurality of electron beam paths and means defining plural damped disc-shaped cavities, wherein the plurality of electron beam paths cut the cavities and the Klystron further comprises an annular input cavity and an annular output cavity disposed around the substantially circular external periphery of respective disc-shaped cavities in communication therewith, the output cavity is arranged to receive RF power from the electron beams, wherein the cavities are arranged to support one of a single resonant rotating wave in a whispering-gallery mode, and a single resonant standing wave in a whispering-gallery mode.
2. (Original) A klystron according to claim 1, further comprising a wall defining a substantially disc-shaped cavity, the wall having one or more apertures for coupling thereto of electron beam energy, the cavity wall having a substantially circular outer periphery permitting coupling to a substantially annular input or output wave guide, wherein the said coupling is afforded by a plurality of windows distributed along the external periphery of the disc-shaped cavity.
3. (Original) A klystron according to claim 2, wherein each window comprises a ceramic member secured to a waveguide wall.
4. (Previously Presented) A klystron according to claim 1 comprising an input cavity, two gain cavities, a second harmonic cavity and an output cavity.
5. (Previously Presented) A klystron according to claim 1 wherein at least one cavity has an RF absorber member disposed therein.

6. (Previously Presented) A klystron according to claim 1, wherein each cavity has a vacuum port.
7. (Original) A klystron according to claim 6, wherein the port is axial.
8. (Original) A klystron according to claim 6 or 7, wherein the port has a diameter around 40 cm.
9. (Previously Presented) A klystron according to claim 6 having a circular RF absorber member.
10. (Original) A klystron according to claim 9 wherein the absorber is of SiC, and extends outwardly from the port by an amount such that the operating mode of the cavity is virtually unaffected.
11. (Previously Presented) A klystron according to claim 1 arranged to operate in a $TM_{m,n,q}$ mode
12. (Original) A klystron according to claim 11, wherein $m=1$
13. (Previously Presented) A klystron according to claim 1 having plural beam tubes.
14. (Previously Presented) A klystron according to claim 13 having one focussing solenoid per beam tube
15. (Previously Presented) A klystron according to claim 1 arranged to operate in the frequency range 900-1000 MHz.
16. (Previously Presented) A klystron according to claim 1 arranged to operate at substantially 937 MHz
17. (Previously Presented) A klystron according to claim 1 arranged to provide tens of megawatts.
18. (Original) A klystron according to claim 17 arranged to provide about 50 MW.

19. (Previously Presented) A klystron according to claim 1 having a waveguide around each input and output cavity.
20. (Previously Presented) A klystron according to claim 1 arranged to operate with a power conversion efficiency over 65 %
21. (Previously Presented) A klystron according to claim 1 arranged to operate with a power conversion efficiency of over 70%
22. (Previously Presented) A klystron according to claim 1 wherein the transverse beam spacing in a cavity is about half a wavelength.
23. (Previously Presented) A klystron according to claim 1 wherein the diameter of the beam pipe is small.
24. (Previously Presented) A klystron according to claim 1 wherein the diameter is about 1/16 of the operating wavelength.
25. (Previously Presented) A klystron according to claim 1 arranged to operate in a having a common vacuum pump and operating at 10^{-8} mbar or better.
26. (Canceled)
27. (Canceled)
28. (Canceled)
29. (Canceled)
30. (Canceled)
31. (Previously Presented) A klystron amplifier comprising beam-path apparatus defining a plurality of electron beam paths and cavity apparatus defining plural damped disc-shaped cavities, wherein the plurality of electron beam paths cut the cavities and the Klystron further comprises an annular input cavity and an annular output cavity disposed around

the substantially circular external periphery of respective disc-shaped cavities in communication therewith, the output cavity is arranged to receive RF power from the electron beams, wherein the cavities are arranged to support one of a single resonant rotating wave in a whispering-gallery mode, and a single resonant standing wave in a whispering-gallery mode.